

The Examiner rejected claims 1-3, 6, 20, 21, 23, 31, and 33 under 35 U.S.C. §102(b) as being anticipated by Ogashiwa, Australian Patent AU-B-68124/90.

The Examiner rejected claims 1-3, 6, 20, 21, 23, 35, and 36 under 35 U.S.C. §103(a) as being unpatentable over Yamamoto et al. (EP 0544915 A1, hereinafter “Yamamoto”).

The Examiner rejected claim 4 under 35 U.S.C. §103(a) as being unpatentable over Yamamoto or Ogashiwa, as applied above, and in view of Gundotra et al. (US Patent 5369880, hereinafter “Gundotra”).

The Examiner rejected claims 7-10, 12-19, 24-28, 30, 32, and 34 under 35 U.S.C. §103(a) as being unpatentable over Yamamoto, in view of Yamashita et al. (US Patent 6179935, hereinafter “Yamashita”).

The Examiner rejected claims 5, 18, 22, and 29 under 35 U.S.C. §103(a) as being unpatentable over Yamamoto, Ogashiwa, or Yamamoto and Yamashita, in view of Behlen et al. (US Patent 5598033, hereinafter “Behlen”).

Applicants respectfully traverse the §112, §102, and §103 rejections with the following arguments.

35 U.S.C. § 112, First Paragraph

The Examiner rejected claims 35 and 36 under 35 U.S.C. §112, first paragraph, alleging that “the specification, while being enabling for a solder including about 3% to about 15% antimony by weight (see page 3, line 14), does not reasonably provide enablement for “‘more than 10% antimony by weight’. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate

in scope with these claims. The claimed range 'more than 10% antimony by weight' covers up to 100% of antimony."

Applicants respectfully contend that claim 35 depends from claim 1 and therefore automatically includes all limitations of claim 1, including the limitation of "wherein the solder member comprises a tin-antimony alloy that includes about 3% to about 15% antimony by weight". Thus, claim 35 comprises the feature of "wherein the tin-antimony alloy includes more than 10% antimony by weight" subject to the limitation of "wherein the solder member comprises a tin-antimony alloy that includes about 3% to about 15% antimony by weight". Therefore, claim 35 effectively has the feature of: wherein the tin-antimony alloy includes more than 10% antimony by weight to about 15% antimony by weight, which is enabled by the specification.

Applicants respectfully contend that claim 36 depends from claim 20 and therefore automatically includes all limitations of claim 20, including the limitation of "wherein the solder member comprises a tin-antimony alloy that includes about 3% to about 15% antimony by weight". Thus, claim 36 comprises the feature of "wherein the tin-antimony alloy includes more than 10% antimony by weight" subject to the limitation of "wherein the solder member comprises a tin-antimony alloy that includes about 3% to about 15% antimony by weight". Therefore, claim 36 effectively has the feature of: wherein the tin-antimony alloy includes more than 10% antimony by weight to about 15% antimony by weight, which is enabled by the specification.

Based on the preceding arguments, Applicants respectfully request that the 35 U.S.C. §112, first paragraph rejection of claims 35 and 36 be withdrawn.

35 U.S.C. § 102

The Examiner rejected claims 1-3, 6, 20, 21, 23, 31, and 33 under 35 U.S.C. §102(b) as being anticipated by Ogashiwa, Australian Patent AU-B-68124/90.

Applicants respectfully contend that Ogashiwa does not anticipate claim 1, because Ogashiwa does not teach each and every feature of claim 1. For example, Ogashiwa does not teach “wherein the solder member consists essentially of a tin-antimony alloy, and wherein the tin-antimony alloy consists of about 3% to about 15% antimony by weight and a remainder consisting essentially of tin by weight”. Based on the preceding arguments, Applicants respectfully maintain that Ogashiwa does not anticipate claim 1, and that claim 1 is in condition for allowance. Since claims 2-6, 31, and 35 depend from claim 1, Applicants contend that claims 2-6, 31, and 35 are likewise in condition for allowance.

Applicants respectfully contend that Ogashiwa does not anticipate claim 20, because Ogashiwa does not teach each and every feature of claim 20. For example, Ogashiwa does not teach “wherein the solder member consists essentially of a tin-antimony alloy, and wherein the tin-antimony alloy consists of about 3% to about 15% antimony by weight and a remainder consisting essentially of tin by weight”. Based on the preceding arguments, Applicants respectfully maintain that Ogashiwa does not anticipate claim 20, and that claim 20 is in condition for allowance. Since claims 21-23, 33 and 36 depend from claim 20, Applicants contend that claims 21-23, 33 and 36 are likewise in condition for allowance.

35 U.S.C. § 103

The Examiner rejected claims 1-3, 6, 20, 21, 23, 35, and 36 under 35 U.S.C.

§103(a) as being unpatentable over Yamamoto et al. (EP 0544915 A1, hereinafter “Yamamoto”).

Applicants respectfully contend claims 1 and 20 are not unpatentable under 35 U.S.C.

§103(a) over Yamamoto, because Yamamoto does not teach or suggest each and every feature of claims 1 and 20. For example, Yamamoto does not teach or suggest “wherein the solder member consists essentially of a tin-antimony alloy, and wherein the tin-antimony alloy consists of about 3% to about 15% antimony by weight and a remainder consisting essentially of tin by weight”.

Based on the preceding arguments, Applicants respectfully maintain that claims 1 and 20 are not unpatentable over Yamamoto, and that claims 1 and 20 are in condition for allowance. Since claims 2-6, 31, and 35 depend from claim 1, Applicants contend that claims 2-6, 31, and 35 are likewise in condition for allowance. Since claims 21-23, 33 and 36 depend from claim 20, Applicants contend that claims 21-23, 33 and 36 are likewise in condition for allowance.

The Examiner rejected claims 7-10, 12-19, 24-28, 30, 32, and 34 under 35 U.S.C. §103(a) as being unpatentable over Yamamoto, in view of Yamashita et al. (US Patent 6179935, hereinafter “Yamashita”).

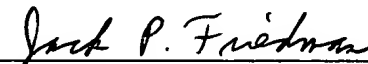
Applicants respectfully contend that claims 7 and 24 are not unpatentable over Yamamoto in view of Yamashita, because Yamamoto, in view of Yamashita does not teach or suggest each and every feature of claims 7 and 24. For example, Yamamoto, in view of Yamashita et al. does not teach or suggest “wherein the solder member consists essentially of a tin-antimony alloy, and wherein the tin-antimony alloy consists of about 3% to about 15%

antimony by weight and a remainder consisting essentially of tin by weight". Based on the preceding arguments, Applicants respectfully maintain that claims 7 and 24 are not unpatentable over Yamamoto in view of Yamashita, and that claims 7 and 24 are in condition for allowance. Since claims 8-19 and 32 depend from claim 7, Applicants contend that claims 8-19 and 32 are likewise in condition for allowance. Since claims 25-30 and 34 depend from claim 24, Applicants contend that claims 25-30 and 34 are likewise in condition for allowance.

CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that claims 1-10 and 12-36 and the entire application meet the acceptance criteria for allowance, and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invite the Examiner to contact Applicants' representative at the telephone number listed below.

Date: 02/20/2003



Jack P. Friedman
Registration No. 44,688
Schmeiser, Olsen & Watts
3 Lear Jet Lane
Latham, New York 12110
(518) 220-1850

Appendix A. Identification of Amended Material

Please amend claims 1, 7, 12, 20, 24, and 28 as follows:

1. (Amended) A method for forming an electronic structure, comprising the steps of:

providing a substrate; and

soldering a lead-free solder member to the substrate without using a joining solder to effectuate the soldering, wherein the solder member [comprises a tin-antimony alloy that includes about 3% to about 15% antimony by weight] consists essentially of a tin-antimony alloy, and wherein the tin-antimony alloy consists of about 3% to about 15% antimony by weight and a remainder consisting essentially of tin by weight.

7. (Amended) A method for forming an electronic structure, comprising the steps of:

providing a first substrate and a second substrate;

soldering a lead-free solder member to the first substrate without using a joining solder to effectuate the soldering, wherein the solder member [comprises a tin-antimony alloy that includes about 3% to about 15% antimony by weight] consists essentially of a tin-antimony alloy, and wherein the tin-antimony alloy consists of about 3% to about 15% antimony by weight and a remainder consisting essentially of tin by weight; and

soldering the solder member to the second substrate with a lead-free joiner solder.

12. (Amended) The method of claim 7, wherein the joiner solder [comprises] consists essentially of a tin-silver-copper alloy, wherein the tin-silver-copper alloy consists essentially of [that includes] by weight about 95.5-96.0% tin, about 3.5-4.0% silver, and about 0.5-1.0% copper.

20. An electronic structure, comprising:

a substrate;

a lead-free solder member soldered to the substrate with no joining solder between the solder member and the substrate, wherein the solder member [comprises a tin-antimony alloy that includes about 3% to about 15% antimony by weight] consists essentially of a tin-antimony alloy, and wherein the tin-antimony alloy consists of about 3% to about 15% antimony by weight and a remainder consisting essentially of tin by weight.

24. (Amended) An electronic structure, comprising:

a first substrate;

a second substrate; and

a lead-free solder member soldered to the first substrate with no joining solder between the solder member and the first substrate, wherein the solder member [comprises a tin-antimony alloy that includes about 3% to about 15% antimony by weight, and wherein the solder member] is soldered to the second substrate with a lead-free joiner solder, wherein the solder member consists essentially of a tin-antimony alloy, and wherein the tin-antimony alloy consists of about 3% to about 15% antimony by weight and a remainder consisting essentially of tin by weight.

28. (Amended) The electronic structure of claim 24, wherein the joiner solder [comprises] consists essentially of a tin-silver-copper alloy, wherein the tin-silver-copper alloy consists essentially of [that includes] by weight about 95.5-96.0% tin, about 3.5-4.0% silver, and about 0.5-1.0% copper.